

MEETING MINUTES
OU 1 ECOLOGICAL RISK ASSESSMENT, CONTAMINANTS OF CONCERN
JULY 8, 1993

Meeting Attendees:

Paul Singh(RFO/ORNL)

Beverly Ramsey(SMS)

Cindy Gee, Jeff Bray, Terri Knudsen, Dennis Smith, Fred Harrington(EG&G)

Mark Lewis, Kelley Crute, Allen Crocket(Stoller)

Jeff Swanson(CDH)

Gary Kleeman, Bonnie Lavelle(EPA)

Joe Gordon(Dames & Moore)

1. Introduction(Cindy Gee)- DOE/EG&G is completing the Toxicity Screen of the RI Report Contaminants of Concern(COC) Screening Flow Chart. Cindy requested comments from agencies concerning the inclusion or exclusion of COC's for the ecological risk assessment.

2. Methods/Results of COC Screening(Mark Lewis)- Described COC screening process completed by Stoller and Weston. The three criteria used in identifying COC's includes occurrence, extent, and ecotoxicity. In the contaminant screening process, Weston completed the occurrence and extent criteria while Stoller completed the ecotoxicity phase using the site contaminants resulting from the of UTL/background comparison/ANOVA screening.

Mark Lewis described the tables listing the occurrence and concentrations of potential contaminants. The eight final COC's of the environmental evaluation were also explained.

Question(Beverly Ramsey):

Why toluene is in high concentrations in OU 1 subsurface soils?

Answer(Mike):

Forty percent of background samples also contained toluene. Could also be present in QA samples, indicating laboratory problems.

Question(Gary Kleeman):

What is risk of Uranium in surface soil?

Answer(Cindy):

Phase II radioisotope work delineated the Uranium present as

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naturally occurring Uranium. It was therefore removed from further consideration in the first screening process(UTL/background screen). Uranium in groundwater was not eliminated.

Question(Bonnie Lavelle):

This list of COC's differs from the previous list?

Answer(Mike/Cindy):

Yes-the list of COC's is different. The reason is that the use of ANOVA caused the test to only look at the contaminants above background.

Question(Beverly):

Does Toluene imply a risk which shouldn't be there?

Answer(Cindy):

We cannot dismiss Toluene at this point. Levels varied greatly; some samples occurred ten times over background.

Comments:

- Nothing in Standard Operating Procedures to explain high levels as lab/sampling artifact.
- Coherex as a dust suppressant may cause increased levels but it cannot be definitized as the source.

3. It was agreed on by the group that the first list of COC's will be disregarded.

4. The list of invertebrates included in assessment of hotspots is listed in earlier minutes.

5. Biomagnification was described as increasing concentration levels through different trophic levels.

Analysis of biomagnification will be completed with coyotes. Effects are expected to be negligible.(Mark)

6. Bonnie requested that Cindy forwards data, when completed, of OU wide risk estimation(#5) and Identification of hot spots within OU using polygon method(#8). (see attached flowchart: Process for Identification of Contaminants of Concern, Environmental Evaluation)

7. Bonnie wants to find agreement on screening procedures. Cindy explained that the eleven criteria defined the UTL; Spatial, Temporal, Geochemical Criteria; and ANOVA measurements. Nothing was added. Gary

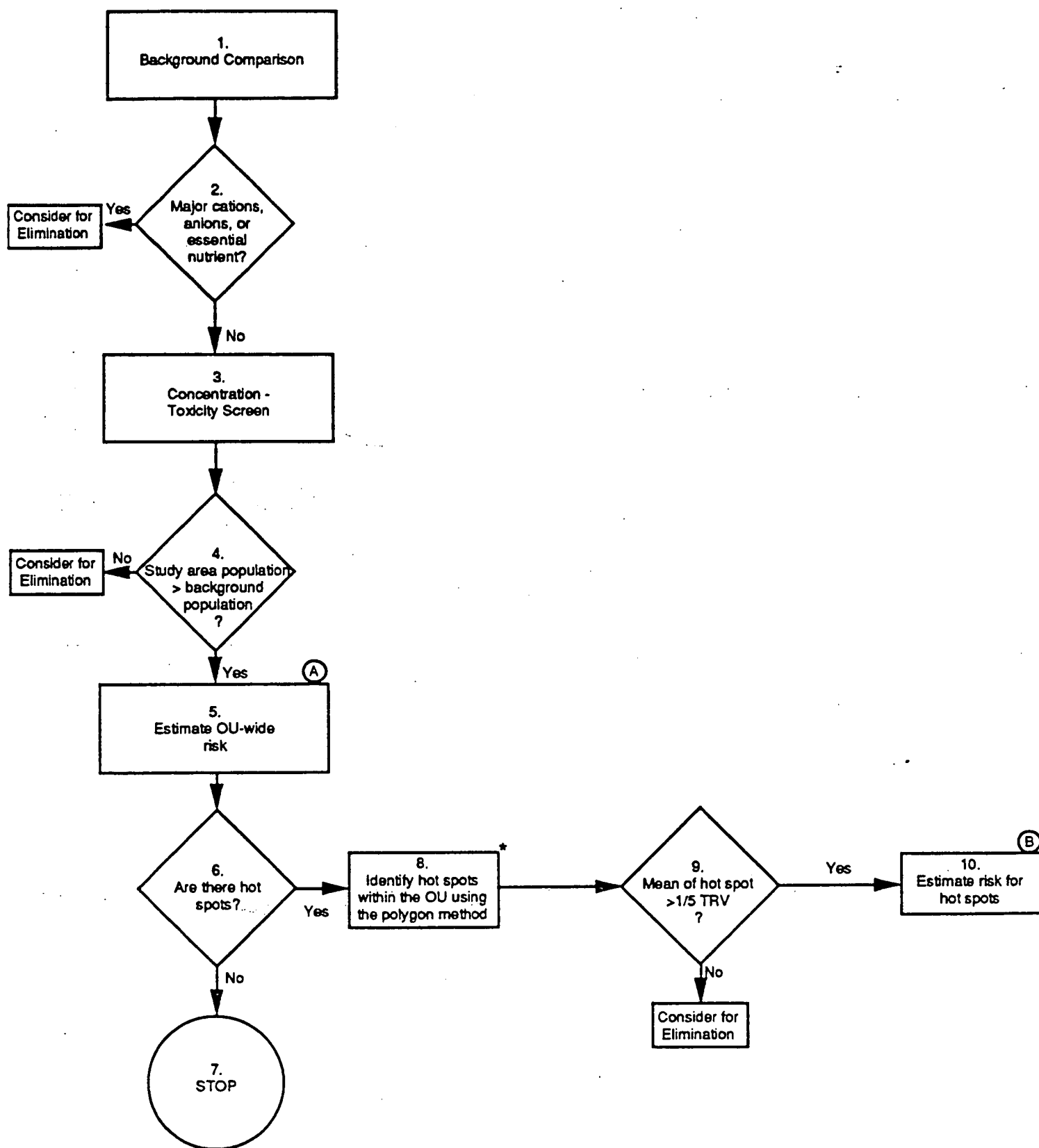
Kleeman mentioned UTL/Spatial/ANOVA box should be used only for Nature and Extent. The list of contaminants from this list should not be forwarded to the risk assessors.

8. Beverly discussed details in EPA work sheet: Selection Process for COC's.

9. Two options were discussed in the COC list decision. Cindy can go forward with work and contend with possibility of dispute or a meeting can be planned to discuss specific concerns of individual contaminants and criteria.

10. A meeting has been planned for Tuesday at 1:00 for DOE, CDH, and EPA to discuss specific concerns in the contaminants selected through the UTL/ background screening process. Cindy Gee will fax the site contaminant list(using of Criteria #1,2,3,4,8) on Monday to DOE, EPA, and CDH. The subsequent meeting will involve only nature and extent contamination concerns and not try to second guess the risk assessors.

Figure 1. Process for Identification of Contaminants of Concern: Environmental Evaluation



* Hot-spot risks evaluated for soil invertebrates and vegetation

CRITERIA FOR IDENTIFICATION OF CONTAMINANTS OF CONCERN: OU 1 ENVIRONMENTAL EVALUATION

1. Occurrence

The chemical must have been detected in samples from abiotic media and expected to occur in the waste stream or accidentally released. Judgement was made quantitatively or qualitatively based on Phase I, II, and III RFI/RI data.

This step was accomplished by Weston in the contaminant screening process.

2. Extent

To be named a COC, radionuclides and metals must have occurred at concentrations above the natural background for Rocky Flats. In general, a radionuclide or metal could be included if it occurred at concentrations exceeding background in more than five percent of the samples from a given medium. Organic chemicals were considered if they were detected in greater than five percent of the samples. However, a chemical could also be included if data indicated hot spots or anomalously high concentrations in a small number of samples.

This process resulted in a list of chemicals to be considered for inclusion in the COCs. This step was also accomplished by Weston in the contaminant screening process.

3. Ecotoxicity

This step is equivalent to the "concentration-toxicity" screen of the human health risk assessment. Chemicals that were considered "contaminants" as a result of the screen conducted by Weston were evaluated for potential ecotoxicity of concentration detected at OU 1. Maximum concentrations for a given medium were compared to benchmark toxicity values derived from scientific literature. If the maximum concentration exceeded the reference value, the chemical was included in the COCs. A chemical for which concentrations did not exceed the reference value may have been retained if it occurred in several media (ie., toluene) or if it were known to biomagnify and could result in high exposure to upper level consumers. Biomagnification was considered an important pathway if bioconcentration factors greater than 100 are known for a particular contaminant.

This step was completed by Stoller using results of the contaminant screening conducted by Weston.

Table 1. Potential contaminants at OU 1

Analyte	Medium					
	Surface Soils	Subsurface Soils	Ground-water	Surface Water	Seeps	Sediments
<i>Metals</i>						
calcium (EN)	x	x	x	x		x
magnesium (EN)			x	x		
manganese		x	x	x		
sodium (EN)			x			x
potassium (EN)			x			
lithium		x	x			
strontium			x			
selenium			x			
vanadium			x			
<i>Radionuclides</i>						
Pu	x					
Am	x					
<i>Volatile Organic Compounds</i>						
1,1,1-trichloroethane	na		x	x		x
trichloroethene	na	x	x	x	x	
tetrachloroethene	na	x	x	x	x	
carbon tetrachloride	na		x			
chloroform	na		x			
1,1-dichloroethene	na		x			
1,2-dichloroethene	na		x	x		
cis 1,2-dichloroethene	na		x			
1,1,2-trichloroethane	na		x			
1,1-dichloroethane	na		x	x		
1,2-dichloroethane	na		x	x		
toluene	na	x	x	x	x	x
xylene (total)	na		x			

EN - essential nutrient

na - not analyzed

Table 2. Occurrence of potential contaminants in OU1 environmental media

Analyte	Medium				
	Surface Soils	Subsurface Soils	Ground-water	Surface Water	Sediments
Metals*					
manganese		6	9 (col)	<1	
lithium		6	44 (col)		
strontium			100		
selenium			36 (col)		
vanadium			44 (col)		
Radionuclides*					
Pu	88				
Am	82				
Volatile Organic Compounds**					
1,1,1-trichloroethane			14	1	9
1,1,2-trichloroethane			3		
trichloroethene		2	34	3	
tetrachloroethene		2	28	2	
carbon tetrachloride			16		
chloroform			19		
1,1-dichloroethene			13		
1,2-dichloroethene			4	1	
cis 1,2-dichloroethene			5		
1,1-dichloroethane			5	1	
1,2-dichloroethane			2	2	
toluene		97	10	3	15
xylene (total)			3		

* values are percent of samples with concentrations above background

** values are percent of samples containing detectable levels

Table 3. Maximum concentrations, preliminary TRVs, and biconcentration factors for OU 1 contaminants

Analyte	Max. surface water conc.	Aquatic TRV	Max soil conc.	Terrestrial TRV	BCF
<i>Metals</i>					
manganese	621 ug/l	1,000 ug/l	1873 mg/kg	??	
lithium	--		--		
strontium	--		--		
selenium	--	237	--		
vanadium	--		--		
<i>Radionuclides</i>					
Plutonium-239,240	--		12.99 pCi/kg		
Americium-241	--		1.94		
<i>Volatile Organic Compounds</i>					
1,1,1-trichloroethane	4 ug/l	4,500 ug/l	--		65 (10)
1,1,2-trichloroethane	--		--		
trichloroethene	8	3,130	140	200 mg/kg/da	52 (11)
tetrachloroethene	2	840	47	10	41 (8)
carbon tetrachloride	--		--		
chloroform	--		--		
1,1-dichloroethene	--		--		
1,2-dichloroethene	2	666	--		
cis 1,2-dichloroethene	3	666	--		
1,1-dichloroethane	3	??	--		
1,2-dichloroethane	14	??	--		
toluene	5	1,750	2,000	111	49 (11)
xylene (total)	--		--		

Table 4. Environmental Evaluation contaminants of concern

Analyte	Aquatic species	Terrestrial plants	Terrestrial herbivores	Terrestrial carnivores	Biomagnification
manganese	x		x		
selenium			x	x	x
Plutonium-239,240		x	x	x	
Americium-241		x	x	x	
trichloroethene			x	x	
tetrachloroethene			x	x	
1,1-dichloroethene			x	x	
toluene	x	x	x	x	

1. Aquatic species will be evaluated for direct exposure to contaminants in surface water
2. Plants will be evaluated for direct exposure to contaminants in soils and shallow groundwater
3. Terrestrial herbivores will be evaluated for ingestion of vegetation, surface water, and soil (where data are available to evaluate soil ingestion)
4. Terrestrial carnivores will be evaluated for ingestion of prey and surface water
5. The potential for increased exposure via biomagnification will be evaluated for selenium as it was detected in groundwater and could accumulate in plant species.

June 8, 1993

EG+G

ERA mtg.

Attendees

	<u>Name</u>	<u>Company</u>	<u>Phone #</u>	<u>Fax #</u>
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2.	Cindy Gee	EG&G	966-8550	8556
3.	Mark Lewis	Stoller	449-7220	443-1408
4.	Kelley Crute	Stoller	449-7220	443-1408
5.	Allen Crockett	Stoller	449-7220	443-1408
6.	JEFF SWANSON	CDH	692-3416	759-5355
7.	Jeff Bray	EG&G	966-8695	8556
8.	BEVERLY RAMSEY	SALS	301-353-0072 966-2203	301-353-0076
9.	TERRY KNUDSEN	EG&G	966-8579	966-8575
10.	Joe Gordon	Dames+Moore	299-7996	299-7901
11.	Dennis Smith	EG&G	966-8636	8556
12.	Fred Harrington	EG&G	966-8744	8663
13.	Gary Kleeman	EPA	294-1071	7559
14.	BONNIE LAVELLE	EPA	294-1067	7559
15.				

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